

# PATENT COOPERATION TREATY

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To:

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# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 5 January 2005 (05.01.2005)

Applicant's or agent's file reference  
CJ04004

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/KR 2004/002270

International filing date (day/month/year)  
7 September 2004 (07.09.2004)

Priority Date (day/month/year)  
7 January 2004 (07.01.2004)

International Patent Classification (IPC) or both national classification and IPC  
F16H 61/12, F02D 45/00.

Applicant

KEFICO CORPORATION

**1. This opinion contains indications relating to the following items:**

- ☒ Cont. No. I Basis of the opinion
- ☐ Cont. No. II Priority
- ☐ Cont. No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Cont. No. IV Lack of unity of invention
- ☒ Cont. No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Cont. No. VI Certain documents cited
- ☒ Cont. No. VII Certain defects in the international application
- ☒ Cont. No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

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**Continuation No. I**

**Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed.

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**Continuation No. V**

**Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims 1-10	YES
	Claims ----	NO
Inventive step (IS)	Claims 1-10	YES
	Claims ----	NO
Industrial applicability (IA)	Claims 1-10	YES
	Claims ----	NO

**2. Citations and explanations:**

The following documents are referred to:

- D1: US 5 830 106 A (ABE, M. et al.) 03.11.1998
- D2: JP 2004 011869 A (NISSAN MOTOR LTD) 15.01.2004
- D3: JP 2003 294128 A (JATCO LTD) 15.10.2003
- D4: US 5 848 381 A (ISHII, S. et al.) 08.12.1998
- D5: US 5 995 887 A (HATHAWAY, R. R. et al.) 30.11.1999
- D6: KR 2003 0040600A (HYUNDAI MOTOR COMPANY) 23.05.2003

Document D1, which is considered to represent together with Documents D2 and D3 the closest prior art, discloses a malfunction judgment system of an oil temperature sensor for detecting a hydraulic oil temperature in an automatic transmission of a vehicle. The system receives an output from the oil temperature sensor to judge a malfunction of the oil temperature sensor when an increase rate of the oil temperature is smaller than a predetermined value in a predetermined time period after the vehicle starts running. A running condition detecting element detects a vehicle running condition. The system further has a plurality of conditions for judging the malfunction of the oil temperature sensor based on the detected running condition of the vehicle and the output of the oil temperature sensor.

Document D2 discloses a functional diagnostic method for oil temperature sensor for automatic transmission to enable decision of the functional trouble of an oil temperature sensor situated at an automatic transmission when a signal from the sensor is in an ordinary working temperature region. An automatic transmission system for a vehicle is provided with

an intake air temperature sensor to detect an engine intake air temperature, an air conditioner outside air temperature sensor to detect an outside air temperature, and an oil temperature sensor to detect a temperature of oil to operate an automatic transmission. Signals from the sensors are inputted to a control unit for controlling the automatic transmission, it is diagnosed that the oil temperature sensor is failed when an outside air temperature is compared with an oil temperature to detect it to be lower than the outside air temperature.

Document D3 describes a sensor-failure decision system for determining a sensor failure of an automobile temperature sensor, comprises a first memory section adapted to receive input information indicative of a temperature of working fluid used in the automotive power train component part and detected by the automobile temperature sensor, a second memory section for storing a predetermined normal temperature region and a plurality of predetermined partitioned temperature regions which are obtained by partitioning a specified temperature region being lower than and continuous with the predetermined normal temperature region into a plurality of temperature regions, and a timer for measuring an elapsed time during which the temperature detected by the automobile temperature sensor is continually included in either one of the partitioned temperature regions. Also provided is a sensor-failure decision section for determining that a sensor failure of the automobile temperature sensor is present when the elapsed time measured by the timer reaches predetermined time duration.

Document D5 discloses a method and apparatus are provided to determine a failure of an automatic transmission temperature sensor in an automobile. The apparatus detects a start-up of the vehicle. A sensor detects the transmission fluid temperature. The transmission fluid temperature at start-up is checked to see if the temperature is below a first predetermined temperature or above a second predetermined temperature. If the sensor does not detect a predetermined change in temperature during operation of the vehicle after it is determined the transmission fluid temperature at start-up is above the first predetermined or below the second predetermined temperature, the sensor has failed.

Finally document D6 discloses a method for detecting failure of oil temperature sensor of automatic transmission in vehicle. The coolant temperature of an engine is compared with the second predetermined value in case of vehicle speed to be over the first predetermined value. Oil temperature of an automatic transmission is compared with the third predetermined value in case of vehicle speed and coolant temperature to be over the first and second predetermined values. Intake temperature is compared with the fourth predetermined value in detecting coolant temperature less than the second predetermined value. Failure of the temperature sensor is decided and a warning control signal is output in continuing oil temperature below the third predetermined value over the fifth reference time. Convenience is improved by deciding the failure of the oil temperature sensor accurately and promptly.

The subject matter of independent claims 1 to 4 is new and involve an inventive step as the cited documents neither disclose nor suggest the common special technical feature of common step checking the vehicle voltage with a critical vehicle voltage, linking the subject matter of said independent claims.

Dependent claims 5 to 10 are new and inventive by virtue of dependency.

Industrial applicability is given.

**Continuation No. VII:**

**Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
To meet the requirements of PCT Rule 5.1(a)(ii), documents D1 to D6 should be identified in the description and the relevant background art disclosed therein should be outlined.

In order to meet the requirement of PCT Rule 6.3(b), each independent claim should, whenever appropriate, be clearly delimited in relation to the closest prior art using the two part form.

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**Continuation No. VIII:**

**Certain observations on the International application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The various definitions of the invention given in independent process claims 1 to 4 are such that the claims as a whole are not clear and concise, contrary to Article 6 PCT. The claims should be recast to include only the minimum necessary number of independent claims in any one category (Rule 6.4(a)-(c) PCT).

In the present case it is considered appropriate to use only one independent claim in any category.

The applicant is kindly informed, that, occasionally, throughout the description, abstract and the claims some words appearing at the end of a line are truncated and wrapped over to the beginning of the following line.

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